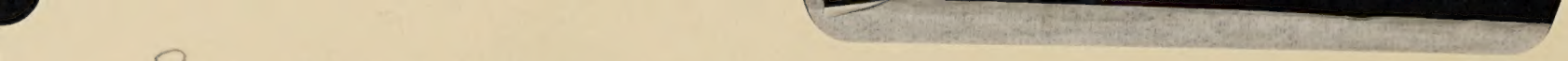

Box 26 Folder 6

CIRCA 1955

Richard S. MacNeish
99.38
Box 40 No 008

ANCIENT MAIZE AND MEXICO

by

Richard S. MacNeish

That the elusive developmental stages leading to civilization in Meso-America might be more easily found in the peripheries of that area was a conjecture of Dr. A. V. Kidder at an anthropological meeting a number of years ago. Recent archaeological investigations in northeastern Mexico, I believe, have shown that this was a very astute observation.

Northeastern Mexico, that is the southern part of the State of Tamaulipas and the northernmost part of the State of Veracruz, has a number of characteristics particularly

Richard B. Woodbridge

That the elusive developmental stages leading to civilization in Meso-America might be more easily found in the periphertes of that area was a conjecture of Dr. A. V. Kidder at an anthropological meeting a number of years ago. Recent archaeological investigations in northeastern Mexico, I believe, have shown that this was a very astute observation.

Northeastern Mexico, that is the southern part of the State of Tamaulipas and the northernmost part of the State of Veracruz, has a number of characteristics particularly

adapted for the study of this problem. First of all, in this area remnants of ancient stone cities occur but they are not so numerous or rich that one is likely to be sidetracked from the problem of the search for early remains. Secondly, this region is outside the area of dense vegetation and humid climate so that small sites without architectural features can be easily found and so that many cave sites have excellent preservation of ancient human remains. (See map)

Considerable archaeological investigation has been undertaken in this region. Dr. Gordon Ekholm, in 1940, dug four sites in the Tampico-Panuco region that revealed a sequence of six archaeological phases.[1/] In 1948, I made further excavations at Panuco and added three more earlier phases to this long sequence.[2/] (See Photo. I). These nine periods represent the development of the Maya-speaking Huastecs from a stage when they were simple sedentary pottery-making farmers living in villages to one in which they were the city dwellers with a complex social, political, and ceremonial structure.
Dr. Ekholm and I have gone to considerable length to demonstrate that this local development is connected fairly closely with the development of civilization further south in Mexico and Guatemala. However, for me the greatest value of this sequence is that it seems to tie in fairly closely with one in the Sierra de Tamaulipas to the north and one in the Sierra Madre to the northwest. Here 346 sites have been discovered in

to the northwest. More 366 sites have been discovered in Sierra de Tamaulipas to the north and one in the Sierra Madre is that it seems to tie in fairly closely with one in the Guatemala. However, for me the greatest value of this sequence the development of civilization further south in Mexico and that this local development is connected fairly closely with Dr. Kidder and I have gone to considerable length to demonstrate complex social, political, and ceremonial structure."

villages to one in which they were the city dwellers with a they were simple sedentary pottery-making farmers living in development of the Maya-speaking Mexicans from a stage when sequence." (See Photo. I). These nine periods represent the at Panuco and added three more earlier phases to this long six archaeological phases." In 1948, I made further excavations

aixes in the Tampico-Panuco region that revealed a sequence of

taken in this region. Dr. Gordon Ekholm, in 1940, dug four

Considerable archaeological investigation has been under-

preservation of ancient human remains. (See map)

be easily found and so that many cave sites have excellent climate so that small sites without stratigraphical features can region is outside the area of dense vegetation and humid the problem of the search for early remains. Secondly, this so numerous or rich that one is likely to be sidetracked from area remnants of ancient stone cities occur but they are not adapted for the study of this problem. First of all, in this

archaeological reconnaissance by Jack Hughes, Luis Aveleyra, David Kelley, Peter Pratt, Peter Grant, and myself. Of these nineteen sites have been excavated by me, either alone or with the assistance of Kelley, Pratt, and Grant.

The first pertinent data bearing on the problem of the development of high cultures in Meso-America came in 1949 and the most significant information came from the excavations in the Canyon Diablo (Devil's Canyon). Here in midseason, after excavating two caves that had pre-pottery remains under a pottery complex not unlike that found near Panuco, I decided to test La Perra (The Bitch) cave a few miles away from the other excavation. These test trenches yielded little of interest, so just before the final five-foot test square was completed, I departed to supervise the packing of materials from a previous "dig". Before leaving, I instructed my Mexican foreman to complete the excavation and to bring all equipment and specimens to the base camp, in the town of Los Angeles, for shipment.

Two days later, just outside Los Angeles, I greeted my supervisor (Alberto Aguilar) from La Perra Cave with the question, "Did you bring the equipment and specimens?"

The answer, accompanied by a big grin, was "No."

The answer to my question of "Why the hell didn't you?" was an even wider grin and the statement, "Because I found what you hoped we might find." During the next ten minutes of walking into town, all my interrogations were answered

---

1/ Ekholm, 1940.
2/ MacNeish, 1954.

archaeological reconnaissance by Jack Hughes, Lucie Wagner, David Kelley, Peter Pratt, Peter Grant, and myself. Of these nineteen sites have been excavated by me, either alone or with the assistance of Kelley, Pratt, and Grant.

The first pertinent data bearing on the problem of the development of high cultures in Meso-America came in 1942 and the most significant information came from the excavations in the Garzon Diablo (Devil's Canyon). Here in midseason, after excavating two caves that had pre-pottery remains under a pottery complex not unlike that found near Panuco, I decided to test Le Perra (The Hitch) cave a few miles away from the other excavations. There were standing Fireside Tales of interest, so just before the final five-foot test square was completed, I departed to supervise the packing of materials from a previous "dig". Before leaving, I instructed my Mexican foreman to complete the excavation and to bring all equipment and specimens to the base camp, in the town of Los Angeles, for shipment.

Two days later, just outside Los Angeles, I greeted my supervisor (Alberto Aguilar) from La Perra Cave with the question, "Did you bring the equipment and specimens?"

The answer, accompanied by a big grin, was "No."

The answer to my question of "Why the hell didn't you?" was an even wider grin and the statement, "Because I found what you hoped we might find." During the next ten minutes of walking into town, all my interrogations were answered

---

[1] Ekholm, 1940.
[2] Woolrich, 1934.

with a grin and, "I'll show you some of it at the house." Then as we approached the house, he ran in and returned with a box labelled "Northwest corner of Square N1SW5, depth 14 inches." In it were three corn cobs wrapped in fiber string and a part of a petate (mat). Also, my supervisor informed me that he had left other vegetable artifacts in situ! Needless to say, all my plans changed, and we returned to La Perra Cave with a crew of eight men for three weeks of digging.

During these three weeks of excavations my crew and I peeled off numerous thin layers of ancient vegetable remains and artifacts that had been used by the inhabitants of the cave. In reality only about an area ten feet wide, fifteen feet long, and two feet deep had been preserved but here absolutely nothing had succumbed to the ravages of time. (See photo.)

Later analysis revealed that these vegetable remains had been discarded by two entirely different peoples. The upper part of the refuse belonged to the Laguna Focus, that group which had built the ruins on the hilltops surrounding Canyon Diablo and who were closely related to one of the earliest cultures that Ekholm and I had found at Panuco. These preserved layers showed that these people had made fine pottery, spear points, stone celts, and manos and metates (grinding stones), and had also woven cotton cloth on a loom, made baskets and mats out of palm leaves, and string out of cotton and maguey roots,

as well as nets from the string. However, perhaps more important than these "perishable artifacts" were the ancient food remains. These people had grown beans and squash, two kinds of corn of a sort the Mayas still use and another type of corn like that still grown in the area. Cross-dating of these materials with those at Panuco, and cross-dating the similar Panuco materials with other areas of more southerly Mexico, revealed that these peoples lived about 2,500 years ago.

The analysis of the lowest preserved levels revealed a much earlier culture. Part of these remains have been dated by Dr. Libby of the University of Chicago by the Carbon 14 method of analysis as being 4,445 years old±280. This earlier culture, which has been called La Perra, had no pottery but coiled baskets, simple checker-woven mats, coiled nets, string, wood awls, and the shafts of spears occurred in association with large crude triangular projectile points and a wide variety of crude flint scraping tools, ovoid flint knife blades, and crudely-fashioned manos and metates made from river boulders. However, more amazing than the preserved artifacts was the evidence of the diet of these ancient people. The bulk of their food (86%) seems to have been wild plants, grasshoppers, and wood grubs, but split and scraped bones revealed that some of their sustenance was from large animals (10%). Beside these wild food remains there were a few fragments of domesticated plants. These represent about 4% of their diet. About half

of these specimens were fragments of squash, that is, seeds, rinds, and stems, while the other half were two extremely primitive types of corn. These two types of corn, though ancestral to primitive living Maya corn, are now extinct. Dr. Mangelsdorf, of the Botanical Museum of Harvard University, who has studied all the plant remains, classed these earliest types as Primitive Nal-tel A and B. His study of those two-inch-long cobs has revealed that they have eight rows and that each kernel of every row is surrounded by five pod-like leaves. This pod-pop corn was at the time of its discovery the most primitive corn ever found in Mexico. (See photo).

The La Perra materials, plus their early Carbon 14 date, were in themselves fascinating for here were some materials that were older, if not ancestral, to Meso-American "high culture". However, it was not until Dr. Mangelsdorf had studied the sequence of corn from the cave, and demonstrated not only that very primitive races had been discovered but also that the development of some of the modern races were displayed in the sequence, that plans were made for another expedition to southern Tamaulipas. This expedition was to concentrate its efforts on the finding of dry cave sites that might add more and fuller chapters to the story of the origin of agriculture and the development of civilization in Meso-America.

This expedition, which just completed its field season in May of 1954, began on December 1st, 1953. As usual we, Kelley, Pratt, Grant, and myself, were held up by the buying of equipment, the various kinds of official red tape, and inevitable breakdowns that occur when one works in rugged back country. Though we were fairly successful in finding sites in December, none were the sort of dry cave we wanted.

In my notes, however, there was a reference to a cave in the Sierra Madre that Javier Romero y Juan Valenzuela had visited in 1937. So besides looking for caves, we also sought Don Ignacio Guerra who had been their guide to those caves. Finally, on Christmas Day, we found him, and he was ready and extremely willing to take us to those caves the next day. The trip into the cave was a memorable one for it was not well planned. The first day, about thirty miles on horseback, was extremely trying for us who were not used to the wooden ranchers' saddles that are used in the mountains, and to top this very rough day, it was cold and rainy that night and we were without tents.

We survived, however, and the next day we covered another fifteen miles and camped on the mountain top, just above the caves. The following day we south them. The thick bush had overgrown the trail since 1937, so we spent eight hours with no success. Then, just as we were about to quit for the day, tired, sore, sleepy, and discouraged, two local ranchers

appeared, who, of course, told us we were right next to the correct trail and led us to the caves.

The first cave was extremely large and dry, and holes dug by "treasure" hunters revealed that there were numerous strata of preserved vegetable materials. In fact, within the first five minutes, we had found on the backfill of a treasure hunters' pit an extremely primitive cob of corn and a very old type of projectile point. This is what we had been searching for. For the moment, however, excavations had to wait, and a month was spent building roads, cutting brush, hiring labourers and a cook, and establishing supply lines. Finally, on February 1st, we began excavations.

The cave was better than we had dared hope. Excavation revealed that there was a five-foot deposit containing twenty-two thin layers. Eleven of these layers contained well-preserved vegetable material. Evidently this rock shelter had been occupied, at intervals, over a 5,000-year period. Preliminary analysis has revealed that there was a sequence of at least seven different cultural periods.

Since most of this material has not been analysed and probably will not be completely studied for a number of years to come, I can but briefly describe what was uncovered. The earliest remains, just above the gravel floor of the cave, were those of primitive food-gatherers, without pottery and without agriculture. They, however, did use baskets, primitive

checker-woven mats, string of cactus fibres, and leaf-shaped dart points of flint. These earliest people seem to have developed into ones that had domesticated squash and beans, though most of their diet still was composed of wild food plants. For this group we have a large assemblage of mats, baskets, string, nets, and wooden tools, as well as flint projectile points and scrapers not unlike those of the La Perra culture found in 1949. Some of these projectile points were still actually attached,by means of string and gum, to wooden lance foreshafts. This La Perra-like culture continued to develop through time, and even as we exhumed the material we could see that there were changes in the types of implements used. However, the greatest change was that the people of the next cultural period possessed maize. This corn, though superficially like the Primitive Nal-tel races, is genetically very different. It is instead the Bat Cave type of corn, an extinct primitive maize first found in New Mexico and dated by Carbon 14 as 5,600 years old. Dr. Mangelsdorf believes that this corn is an early highland adapted maize while the Primitive Nal-tel (and present-day Nal-tel) is lowland adapted. The Bat Cave type is, however, more primitive than the latter in that each grain of the cob and its associated five leaves are attached to the main rachis (the cob core) by a small stem. An exact dating for the appearance of this corn in the cave is at present not established. However, Dr. Mangelsdorf has suggested

that it is perhaps earlier here than in New Mexico. This third occupation in our cave is perhaps a very long one and in the later part of it a family was buried in the back of the cave. This "family" consisted of an adult male and female buried facing each other with their arms and legs interlocked. The female had a water bottle made from a gourd, near her head, and a skirt of woven net about her hips. Both the male and female lay on a large woven mat and were covered with another mat which had two baskets placed on it. To one side of these two burials was a child burial wrapped round and round in mats, with two baskets sitting on his head and two very small baskets in his lap.

These layers underlay a thick vegetable layer. Here we uncovered the first potsherds and these were extremely similar to the first ones that occurred in the Sierra de Tamaulipas and to some of the earlier ones at Panuco. Beside large amounts of wooden tools, basketry, and string, there were a few fragments of loom-woven cotton with woven geometric designs. Burials occurred in this layer also and were usually in a sitting position, wound up in seven or eight mats that had been tied together by a number of kinds of rope. The dryness of the cave and the protection offered by the mat wrappings combined to preserve these cadavers as desiccated mummies. Spear points or dart points differed from the preceding periods in that they usually had notches or stems to facilitate their attachment to

the shaft. Clay figurines also appeared at this time and it would appear that this group built the first stone buildings in this area. The diet saw a fundamental shift, for agriculture products were slightly more numerous than wild plant materials. The maize, although much of it is still related to the Bat Cave type, showed a few cobs of hybrid races. Also we found actual grains of a grass called teosinte which was probably brought into this area to be crossed with the corn.

Above this layer of deep refuse was a stratum of white ash overlaid by still another one with preserved vegetable material and artifacts. Here large amounts of pottery occurred and some of this had been decorated by lines cut through the polished surfaces after firing. A large number of large side-notched points occurred and many of these had serrated edges. Shafts of wood indicated that spears or darts were still being used but one shaft is sufficiently small to suggest that the bow and arrow were making their appearance in this region. Fragments of mats, baskets, and bags were still very common and most of these had geometrical designs woven in them. Perhaps the most interesting objects found were cigarette butts. These cigarettes were made of small fragments of hollow cane. The smoothed end, the mouth-piece, usually contained some fibrous materials that evidently acted as a filter while the other end was stuffed with tobacco and burned. Thus it would seem that filter-tip cigarettes are no recent invention.

Four mummies were uncovered, all interred in the same manner. The bodies and the burial accompaniments had been wrapped in a number of mats and tied together with string, then this burial bundle was placed in a large basket made by attaching a net to a wooden hoop. Attached to one edge of the rim was a small woven tumpline, or head-carrying strap. Most of these burials have as yet not been unwrapped and we expect that some of the burial furniture may be most enlightening.

The final two cultures that capped this earlier refuse are much the same. Here pottery seems to be more crudely made and the projectile points are all very small and triangular with or without notches. Shafts from these strata indicated that the bow and arrow was in use. In fact, in the adjacent cave in a comparable level, we actually found a bow. Clay tobacco pipes occurred, as did leaves of tobacco. The diet of these people was mainly corn and there seems to have been little change from the previous period.

Beside this rich cave we excavated four more but none of these altered the picture we had found in the first cave. In fact each one confirmed various parts of this first cave's sequence and some of the levels from these other caves added considerable information about some of our seven horizons. Furthermore, these new findings seem to confirm and be confirmed by the sequences established in the Panuco and Sierra de Tamaulipas regions.

Now the final analysis must be undertaken. Not only must the artifacts from each level of each cave be studied, but these materials divided into periods and the periods of each cave correlated. Comparisons of these materials and periods in Tamaulipas also, must be undertaken in order to establish prehistoric relationships. This will be particularly difficult as similar materials of the same antiquity at present do not exist in Mexico. These are the usual tasks of the archaeologist in writing his reports. However, with these ancient remains much of the analysis must be done by technicians and not specialists in archaeology or anthropology. For dating purposes some of these vegetable products must be sent to Nuclear Physicists for analysis of the Carbon 14. Zoologists will study our bone material and perhaps it will take a palaeontologist to identify the very large deer teeth we found in our lowest level. Some of the soils will have to be studied by geologists and palaeo-botonists to tell what the climate and flora was during the various occupations. Much of our analysis will have to be done by botanists. They perhaps will be able to tell not only the ancient florae but, also, the change in diets and perhaps these dietitic shifts may be correlated with advances in material culture. Other specialists, we hope, will examine the corn, beans, squash, cotton, and tobacco. Their investigations should throw some light on the origin, domestication, and evolution of prehistoric American foods.

Once all this mass of information has been studied and the conclusions correlated, then perhaps a preliminary statement may be made about some of the developmental stages for one small part of Mexico that lead to one so-called civilized stage. With this, we should at least be able to redefine some of the specific problems that are concerned with how civilization began in ancient Meso-America.

ILLUSTRATIONS

1. Map of Tamaulipas with sites referred to in the text. Insert shows relationship of Tamaulipas to North America.

2. Excavations at Panuco in 1949.

3. Excavations in La Perra cave.

4. Maize from La Perra cave. From left to right: Primitive Nal-tel A, Primitive Nal-tel B, Modern Nal-tel, Dzit-Bacal, and Breve de Padilla.

5. Three La Perra-like projectile points attached to the shaft of atlatl darts.

6. Mats and baskets covering a mummy from Romero's cave in the Sierra Madre. Found in 1954.

ANCIENT MAIZE AND MEXICO

by

Richard S. MacNeish

That the elusive developmental stages leading to civilization in Meso-America might be more easily found in the peripheries of that area was a conjecture of Dr. A. V. Kidder at an anthropological meeting a number of years ago. Recent archaeological investigations in northeastern Mexico, I believe, have shown that this was a very astute observation.

Northeastern Mexico, that is the southern part of the State of Tamaulipas and the northernmost part of the State of Veracruz, has a number of characteristics particularly

adapted for the study of this problem. First of all, in this area remnants of ancient stone cities occur but they are not so numerous or rich that one is likely to be sidetracked from the problem of the search for early remains. Secondly, this region is outside the area of dense vegetation and humid climate so that small sites without architectural features can be easily found and so that many cave sites have excellent preservation of ancient human remains. (See map)

Considerable archaeological investigation has been undertaken in this region. Dr. Gordon Ekholm, in 1940, dug four sites in the Tampico-Panuco region that revealed a sequence of six archaeological phases.[1] In 1948, I made further excavations at Panuco and added three more earlier phases to this long sequence.[2] (See Photo. I). These nine periods represent the development of the Maya-speaking Huastecs from a stage when they were simple sedentary pottery-making farmers living in villages to one in which they were the city dwellers with a complex social, political, and ceremonial structure. Dr. Ekholm and I have gone to considerable length to demonstrate that this local development is connected fairly closely with the development of civilization further south in Mexico and Guatemala. However, for me the greatest value of this sequence is that it seems to ~~tie in~~ CONNECT fairly closely with one in the Sierra de Tamaulipas to the north and one in the Sierra Madre to the northwest. Here 346 sites have been discovered in

archaeological reconnaissance by Jack Hughes, Luis Aveleyra, David Kelley, Peter Pratt, Peter Grant, and myself. Of these, nineteen sites have been excavated by me, either alone or with the assistance of Kelley, Pratt, and Grant.

The first pertinent data bearing on the problem of the development of high cultures in Meso-America came in 1949 and the most significant information came from the excavations in the Canyon Diablo (Devil's Canyon). Here in midseason, after excavating two caves that had pre-pottery remains under a pottery complex not unlike that found near Panuco, I decided to test La Perra (The Bitch) cave a few miles away from the other excavation. These test trenches yielded little of interest, so ~~just before the final five-foot test square was completed, I~~ departed to supervise the packing of materials from a previous "dig". ~~Before leaving~~, I instructed my Mexican foreman to complete the excavation and to bring all equipment and specimens to the base camp, in the town of Los Angeles, for shipment.

~~Two days~~ later, just outside Los Angeles, I greeted my supervisor (Alberto Aguilar) from La Perra Cave with the question, "Did you bring the equipment and specimens?"

The answer, accompanied by a big grin, was "No."

The answer to my question of "Why the hell didn't you?" was an even wider grin and the statement, "Because I found what you hoped we might find." During the next ten minutes of walking into town, all my interrogations were answered

---

1/ Ekholm, 1940.
2/ MacNeish, 1954.

with a grin and, "I'll show you some of it at the house." Then as we approached the house, he ran in and returned with a box labelled "Northwest corner of Square N18W5, depth 14 inches." In it were three corn cobs wrapped in fiber string and a part of a petate (mat). Also, my supervisor informed me that he had left other vegetable artifacts in situ! Needless to say, all my plans changed, and we returned to La Perra Cave with a crew of eight men for three weeks of digging.

During these three weeks of excavations my crew and I peeled off numerous thin layers of ancient vegetable remains and artifacts that had been used by the inhabitants of the cave. In reality only about an area ten feet wide, fifteen feet long, and two feet deep had been preserved but here absolutely nothing had succumbed to the ravages of time. (See photo.)

Later analysis revealed that these vegetable remains had been discarded by two entirely different peoples. The upper part of the refuse belonged to the Laguna Focus, that group which had built the ruins on the hilltops surrounding Canyon Diablo and who were closely related to one of the earliest cultures that Ekholm and I had found at Panuco. These preserved layers showed that these people had made fine pottery, spear points, stone celts, and manos and metates (grinding stones), and had also woven cotton cloth on a loom, made baskets and mats out of palm leaves, and string out of cotton and maguey roots,

as well as nets from the string. However, perhaps more important than these "perishable artifacts" were the ancient food remains. These people had grown beans and squash, two kinds of corn of a sort the Mayas still use and another type of corn like that still grown in the area. Cross-dating of these materials with those at Panuco, and cross-dating the similar Panuco materials with other areas of more southerly Mexico, revealed that these peoples lived about 2,500 years ago.

The analysis of the lowest preserved levels revealed a much earlier culture. Part of these remains have been dated by Dr. Libby of the University of Chicago by the Carbon 14 method of analysis as being 4,445 years old±280. This earlier culture, which has been called La Perra, had no pottery but coiled baskets, simple checker-woven mats, coiled nets, string, wood awls, and the shafts of spears occurred in association with large crude triangular projectile points and a wide variety of crude flint scraping tools, ovoid flint knife blades, and crudely-fashioned manos and metates made from river boulders. However, more amazing than the preserved artifacts was the evidence of the diet of these ancient people. The bulk of their food (86%) seems to have been wild plants, grasshoppers, and wood grubs, but split and scraped bones revealed that some of their sustenance was from large animals (10%). Beside these wild food remains there were a few fragments of domesticated plants. These represent about 4% of their diet. About half

of these specimens were fragments of squash, that is, seeds, rinds, and stems, while the other half were two extremely primitive types of corn. These two types of corn, though ancestral to primitive living Maya corn, are now extinct. Dr. Mangelsdorf, of the Botanical Museum of Harvard University, who has studied all the plant remains, classed these earliest types as Primitive Mal-tel A and B. His study of these two-inch-long cobs has revealed that they have eight rows and that each kernel of every row is surrounded by five pod-like leaves. This pod-pop corn was at the time of its discovery the most primitive corn ever found in Mexico. (See photo).

The La Perra materials, plus their early Carbon 14 date, were in themselves fascinating for here were some materials that were older, if not ancestral, to Meso-American "high culture". However, it was not until Dr. Mangelsdorf had studied the sequence of corn from the cave, and demonstrated not only that very primitive races had been discovered but also that the development of some of the modern races were displayed in the sequence, that plans were made for another expedition to southern Tamaulipas. This expedition was to concentrate its efforts on the finding of dry cave sites that might add more and fuller chapters to the story of the origin of agriculture and the development of civilization in Meso-America.

This expedition, which just completed its field season in May of 1954, began on December 1st, 1953. As usual we, Kelley, Pratt, Grant, and myself, were held up by the buying of equipment, the various kinds of official red tape, and inevitable breakdowns that occur when one works in rugged back country. Though we were fairly successful in finding sites in December, none were the sort of dry cave we wanted.

In my notes, however, there was a reference to a cave in the Sierra Madre that Javier Romero y Juan Valenzuela had visited in 1937. So besides looking for caves, we also sought Don Ignacio Guerra who had been their guide to those caves. Finally, on Christmas Day, we found him, and he was ready and extremely willing to take us to those caves the next day. The trip into the cave was a memorable one for it was not well planned. The first day, about thirty miles on horseback, was extremely trying for us who were not used to the wooden ranchers' saddles that are used in the mountains, and to top this very rough day, it was cold and rainy that night and we were without tents.

We survived, however, and the next day we covered another fifteen miles and camped on the mountain top, just above the caves. The following day we sought them. The thick bush had overgrown the trail since 1937, so we spent eight hours searching without success. Then, just as we were about to quit for the day, tired, sore, sleepy, and discouraged, two local ranchers

appeared, who, of course, told us we were right next to the correct trail and led us to the caves.

The first cave was extremely large and dry, and holes dug by "treasure" hunters revealed that there were numerous strata of preserved vegetable materials. In fact, within the first five minutes, we had found on the backfill of a treasure hunters' pit an extremely primitive cob of corn and a very old type of projectile point. This is what we had been searching for. For the moment, however, excavations had to wait, and a month was spent building roads, cutting brush, hiring labourers and a cook, and establishing supply lines. Finally, on February 1st, we began excavations.

The cave was better than we had dared hope. Excavation revealed that there was a five-foot deposit containing twenty-two thin layers. Eleven of these layers contained well-preserved vegetable material. Evidently this rock shelter had been occupied, at intervals, over a 5,000-year period. Preliminary analysis has revealed that there was a sequence of at least seven different cultural periods.

Since most of this material has not been analysed and probably will not be completely studied for a number of years to come, I can but briefly describe what was uncovered. The earliest remains, just above the gravel floor of the cave, were those of primitive food-gatherers, without pottery and without agriculture. They, however, did use baskets, primitive

checker-woven mats, string of cactus fibres, and leaf-shaped dart points of flint. These earliest people seem to have developed into ones that had domesticated squash and beans, though most of their diet still was composed of wild food plants. For this group we have a large assemblage of mats, baskets, string, nets, and wooden tools, as well as flint projectile points and scrapers not unlike those of the La Perra culture found in 1949. Some of these projectile points were still actually attached,by means of string and gum, to wooden lance foreshafts. This La Perra-like culture continued to develop through time, and even as we exhumed the material we could see that there were changes in the types of implements used. However, the greatest change was that the people of the next cultural period possessed maize. This corn, though superficially like the Primitive Nal-tel races, is genetically very different. It is instead the Bat Cave type of corn, an extinct primitive maize first found in New Mexico and dated by Carbon 14 as 5,600 years old. Dr. Mangelsdorf believes that this corn is an early highland adapted maize while the Primitive Nal-tel (and present-day Nal-tel) is lowland adapted. The Bat Cave type is, however, more primitive than the latter in that each grain of the cob and its associated five leaves are attached to the main rachis (the cob core) by a small stem. An exact dating for the appearance of this corn in the cave is at present not established. However, Dr. Mangelsdorf has suggested

that it is perhaps earlier here than in New Mexico. This third occupation in our cave is perhaps a very long one and in the later part of it a family was buried in the back of the cave. This "family" consisted of an adult male and female buried facing each other with their arms and legs interlocked. The female had a water bottle made from a gourd, near her head, and a skirt of woven net about her hips. Both the male and female lay on a large woven mat and were covered with another mat which had two baskets placed on it. To one side of these two burials was a child burial wrapped round and round in mats, with two baskets sitting on his head and two very small baskets in his lap.

These layers underlay a thick vegetable layer. Here we uncovered the first potsherds and these were extremely similar to the first ones that occurred in the Sierra de Tamaulipas and to some of the earlier ones at Panuco. Beside large amounts of wooden tools, basketry, and string, there were a few fragments of loom-woven cotton with woven geometric designs. Burials occurred in this layer also and were usually in a sitting position, wound up in seven or eight mats that had been tied together by a number of kinds of rope. The dryness of the cave and the protection offered by the mat wrappings combined to preserve these cadavers as desiccated mummies. Spear points or dart points differed from the preceding periods in that they usually had notches or stems to facilitate their attachment to

the shaft. Clay figurines also appeared at this time and it would appear that this group built the first stone buildings in this area. The diet ~~was~~ underwent a fundamental shift, for agriculture products were slightly more numerous than wild plant materials. The maize, although much of it is still related to the Bat Cave type, showed a few cobs of hybrid races. Also we found actual grains of a grass called teosinte which was probably brought into this area to be crossed with the corn.

Above this layer of deep refuse was a stratum of white ash overlaid by still another ~~one~~ with preserved vegetable material and artifacts. Here large amounts of pottery occurred and some of this had been decorated by lines cut through the polished surfaces after firing. A large number of large side-notched points occurred and many of these had serrated edges. Shafts of wood indicated that spears or darts were still being used but one shaft is sufficiently small to suggest that the bow and arrow were making their appearance in this region. Fragments of mats, baskets, and bags were still very common and most of these had geometrical designs woven in them. Perhaps the most interesting objects found were cigarette butts. These cigarettes were made of small fragments of hollow cane. The smoothed end, the mouth-piece, usually contained some fibrous materials that evidently acted as a filter while the other end was stuffed with tobacco and burned. Thus it would seem that filter-tip cigarettes are no recent invention.

Four mummies were uncovered, all interred in the same manner. The bodies and the burial accompaniments had been wrapped in a number of mats and tied together with string, then this burial bundle was placed in a large basket made by attaching a net to a wooden hoop. Attached to one edge of the rim was a small woven tumpline, or head-carrying strap. Most of these burials have as yet not been unwrapped and we expect that some of the burial furniture may be most enlightening.

The final two cultures that capped this earlier refuse are much the same. ~~Here~~ P pottery seems to be more crudely made and the projectile points are all very small and triangular with or without notches. Shafts from these strata indicated that the bow and arrow was in use, ~~In fact~~ and, in the adjacent cave in a comparable level, we actually found a bow. Clay tobacco pipes occurred, as did leaves of tobacco. The diet of these people was mainly corn and there seems to have been little change from the previous period.

Beside this rich cave we excavated four more but none of these altered the picture we had found in the first cave. In fact each one confirmed various parts of this first cave's sequence and some of the levels from these other caves added considerable information about some of our seven horizons. Furthermore, these new findings seem to confirm and be confirmed by the sequences established in the Panuco and Sierra de Tamaulipas regions.

Now the final analysis must be undertaken. Not only must the artifacts from each level of each cave be studied, but these materials divided into periods and the periods of each cave correlated. Comparisons of these materials and periods in Tamaulipas also, must be undertaken in order to establish prehistoric relationships. This will be particularly difficult as similar materials of the same antiquity at present do not exist in Mexico. These are the usual tasks of the archaeologist in writing his reports. However, with these ancient remains much of the analysis must be done by technicians and not specialists in archaeology or anthropology. For dating purposes some of these vegetable products must be sent to Nuclear Physicists for analysis of the Carbon 14. Zoologists will study our bone material and perhaps it will require a palaeontologist to identify the very large deer teeth we found in our lowest level. Some of the soils will have to be studied by geologists and palaeobotonists to tell what the climate and flora were during the various occupations. Much of our analysis will have to be done by botanists. They perhaps will be able to tell not only the ancient flora but, also, the change in diets and perhaps these dietetic shifts may be correlated with advances in material culture. Other specialists, we hope, will examine the corn, beans, squash, cotton, and tobacco. Their investigations should throw some light on the origin, domestication, and evolution of prehistoric American foods.

Once all this mass of information has been studied and the conclusions correlated, then perhaps a preliminary statement may be made about some of the developmental stages for one small part of Mexico that lead to ~~one so-called~~ in TAMAULIPAS civilized stage. With this, we should at least be able to redefine some of the specific problems that are concerned with how civilization began in ancient Meso-America.

ILLUSTRATIONS

1. Map of Tamaulipas with sites referred to in the text. Insert shows relationship of Tamaulipas to North America.

2. Excavations at Panuco in 1949.

3. Excavations in La Perra cave.

4. Maize from La Perra cave. From left to right: Primitive Nal-tel A, Primitive Nal-tel B, Modern Nal-tel, Dzit-Bacal, and Breve de Padilla.

5. Three La Perra-like projectile points attached to the shaft of atlatl darts.

6. Mats and baskets covering a mummy from Romero's cave in the Sierra Madre. Found in 1954.

ILLUSTRATIONS

1. Map of Tamaulipas with sites referred to in the text. Inset shows relationship of Tamaulipas to North America.

2. Excavations at Pando in 1949.

3. Excavations in La Perra cave.

4. Maize from La Perra cave. From left to right: Primitive Nal-tel A, Primitive Nal-tel B, Modern Nal-tel, Dent-Reed, and Breve de Padilla.

5. Three La Perra-like projectile points attached to the shaft of atlatl darts.

6. Mats and baskets covering a mummy from Romero's cave in the Sierra Madre. Found in 1954.

MAIZE AND MEXICO